PT & R Conference

Pedestrian Safety: What is the Role of Public Transportation?

Seatac, WA

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University of Washington

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Seattle, WA

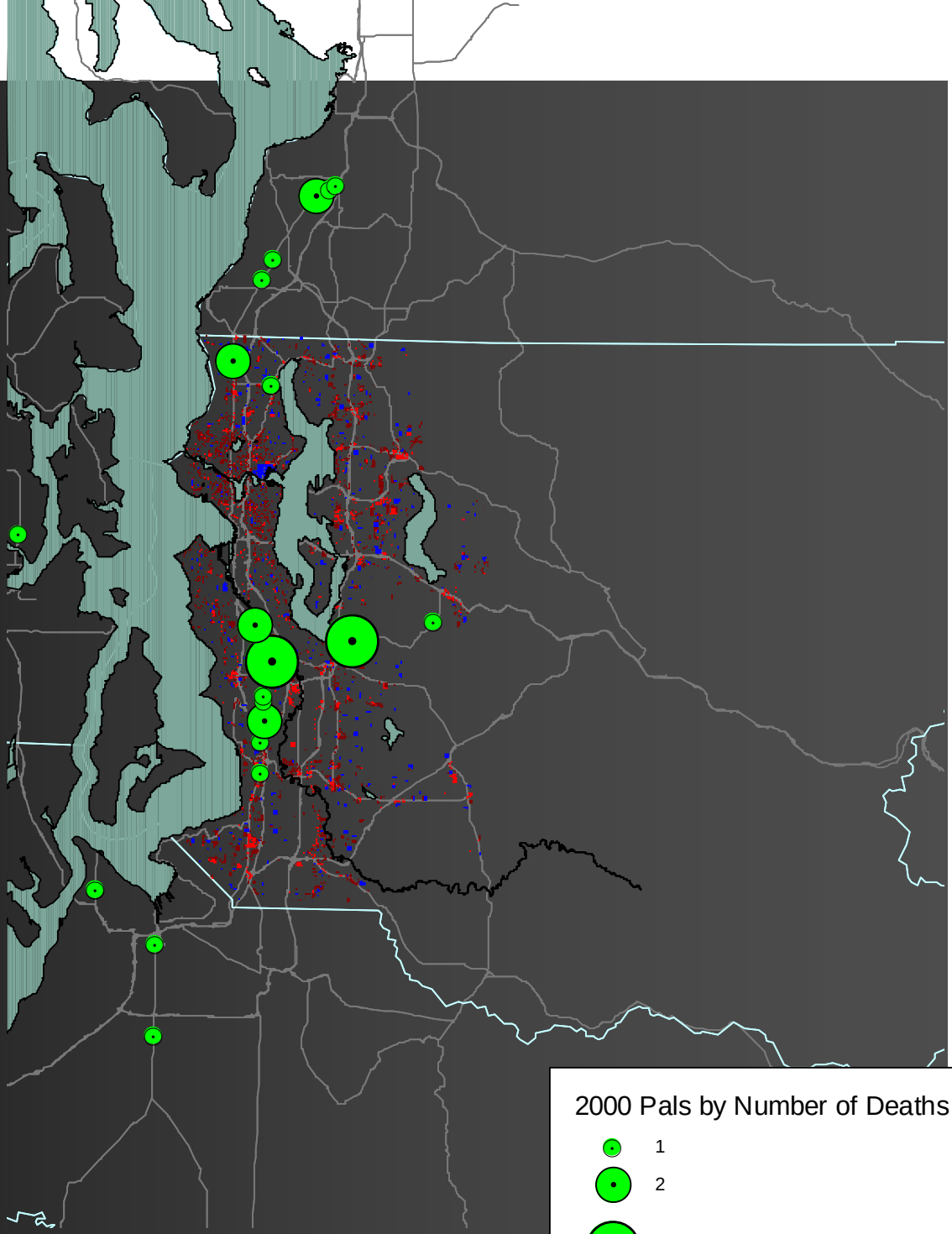

RIDERS

RIDERS

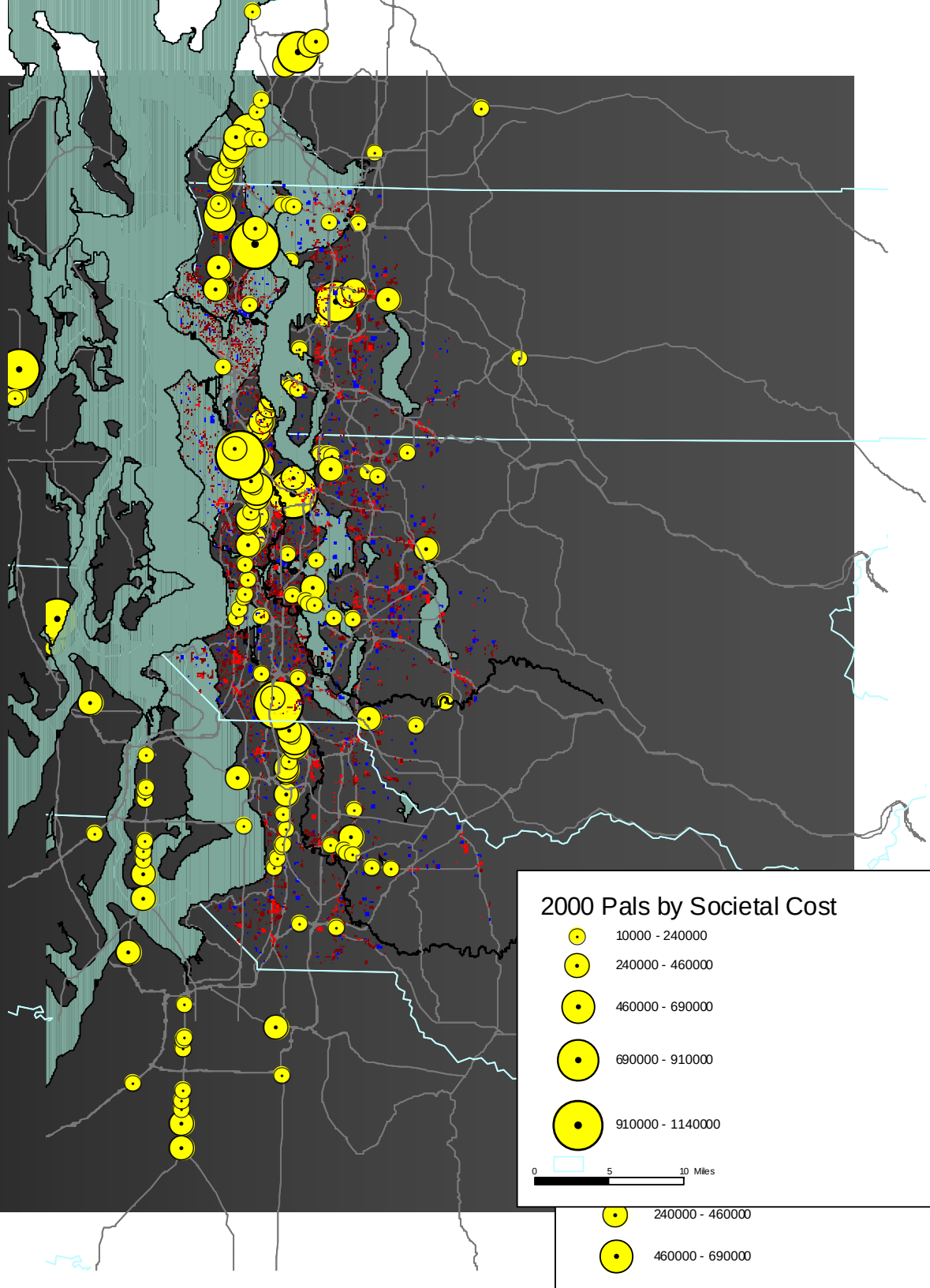
Reported Pedestrian Collisions on State Routes 1995-2000

	Washington State		King County		SR99 in King Co.	
	1995-2000	Avg. Yearly	1995-2000	Avg. Yearly	Total 1995-200	Avg. Yearly
Collisions	1795	299	670	112	289	48
Pedestrians	1895	316	714	119	303	51
Fatal Injuries	175	29	56	9	23	4
Disabling Injuries	376	63	144	24	65	11
Societal Cost	$ 610,208,000	$ 101,701,333	$ 222,015,000	$ 37,002,500	$ 97,414,000	$ 16,235,667

WHERE? Puget Sound Region PALs by Deaths



WHERE? Puget Sound Region PALs By Costs



PEDESTRIAN SAFETY AND TRANSIT CORRIDORS

- **BUS STOP USAGE** (# of people boarding and alighting from bus within 250 feet of the center of a PAL or sample point)= **Statistically significant variable**
- Increasing bus stop usage by 10 people increases the odds that a bus stop will be a PAL by
  - **1.17 times** Model 1 (All PALs)
  - **1.16 times** Model 2 (SR99 PALs)
  - **1.5 times** Model 3 (Non-SR99 PALs)

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PEDESTRIAN SAFETY AND TRANSIT CORRIDORS

- The level of bus usage along state highways is associated with high rates of pedestrian-vehicle collision
- Facilities with high numbers of bus boarding or alighting need to be designed not only for cars, but for pedestrians, allowing people to safely walk along and across the roadway.

PEDESTRIAN SAFETY AND TRANSIT CORRIDORS

- DOT and transit staff must work together to identify facilities and locations where bus riders are at risk and take appropriate steps to insure pedestrian safety.
- Programs to develop multi-modal facilities as well as to integrate major regional facilities within local suburban communities need to pay specific attention to the role of transit in shaping the demand for non-motorized travel on the facilities.

WHERE?

Transportation-Efficient Land Use Mapping Index

TELUMI

Washington State Dept of Transportation
Transportation Research Center (TRAC)

University of Washington Urban Form Lab
Seattle, WA

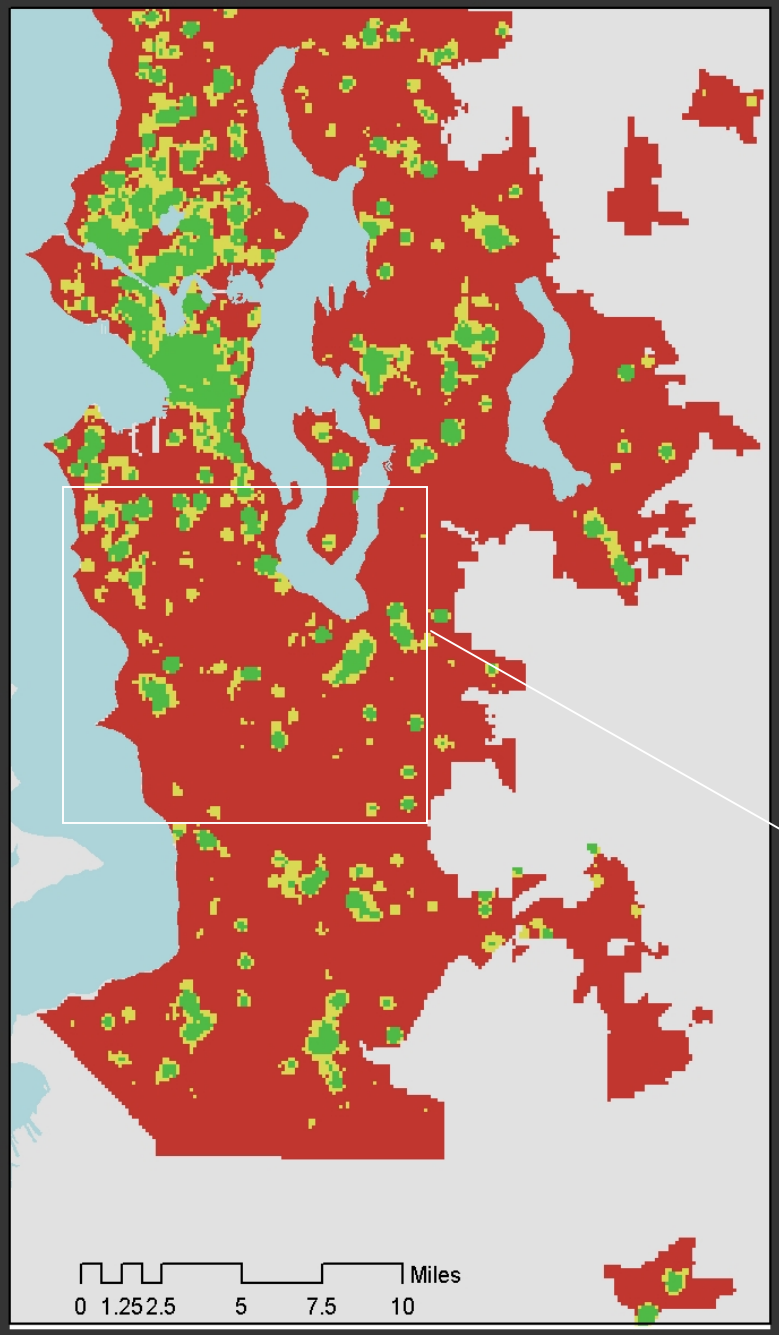
TELUMI

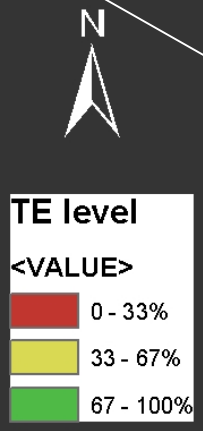
Levels of Transportation Efficiency

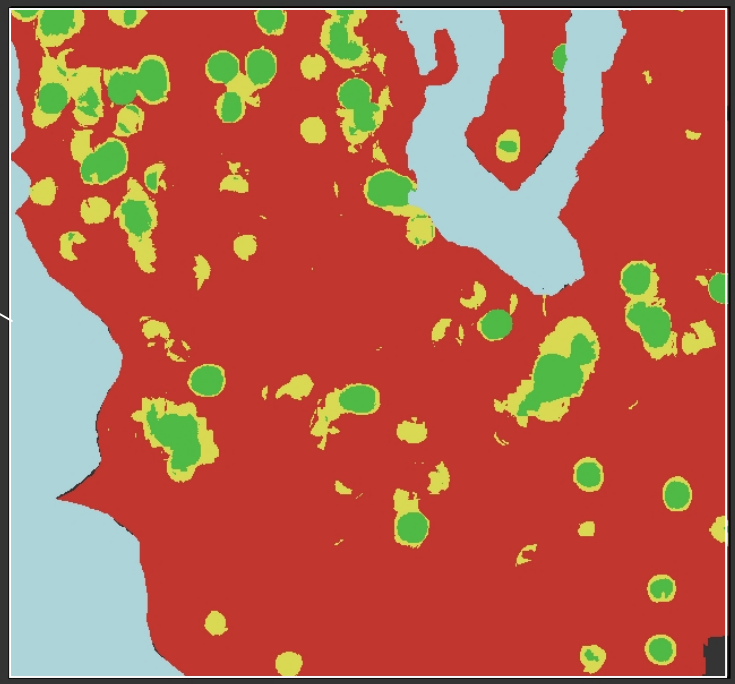
Transportation Systems	TELUMI Cartographic Model	
Transportation Options	**Zone/Threshold Name**	**Zone Characteristics**
Low number and types of options	**Low TE**	Zones with high number of SOV and low number of transit trips
Medium number and types of options	**Latent TE**	Zones with medium number of transit or para-transit trips
High number of types and options	**High TE**	Zones with high number of transit, para-transit, and non-motorized trips, and low SOV number of trips

Map of Composite Measure

TELUMI Project, Urban Form Lab at the University of Washington March 2005

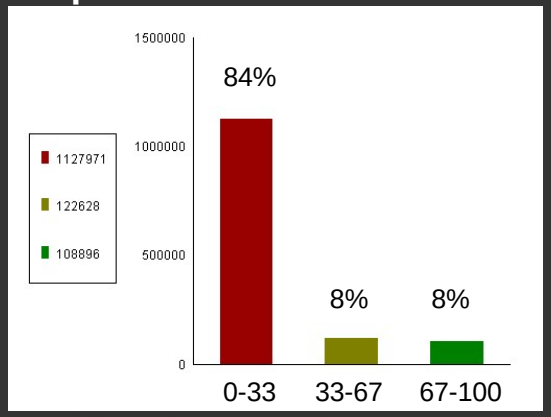






Probability:
# of bus riders > 37

Proportion of three TE classes



TELUMI

Composite Layer

Binary Logit Model

- Dependent variable: Dichotomized BUS ridership data <37 versus >37 riders per bus stop per day
  - Threshold of 37 riders per stop (37x4=148 per intersection) divided the sample population of bus users into those in the top 30 percent of higher bus usage, and all the others.
  - Data distribution: 63 percent (3,356 out of 5,363) of the bus stops and 91 percent of boardings and alightings (430,684 out of 473,169) within the Seattle city limits.
- Independent variables: 9 TELUMI measures averaged in a quarter-mile radius buffer, centered on bus stop locations

TELUMI

Composite Layer

Logit Model Results: Significant variables

Nagelkerke R-square: 0.344

	Variable Name	B*	S.E.	Sign.**	Exp(B)
Variable 1	res_den	0.662	0.053	0	1.939
Variable 2	p_parking	0.506	0.076	0	1.659
Variable 3	nc2	0.471	0.08	0	1.602
Variable 4	emp_den	0.416	0.056	0	1.517
Variable 5	slope	0.324	0.07	0	1.383
Variable 6	blk_size	0.311	0.046	0	1.365
Variable 7	sch_traff	0.002	0	0	1.002
Variable 8	ret_traff	0	0	0	1
	Constant	-5.181	0.179	0	0.006

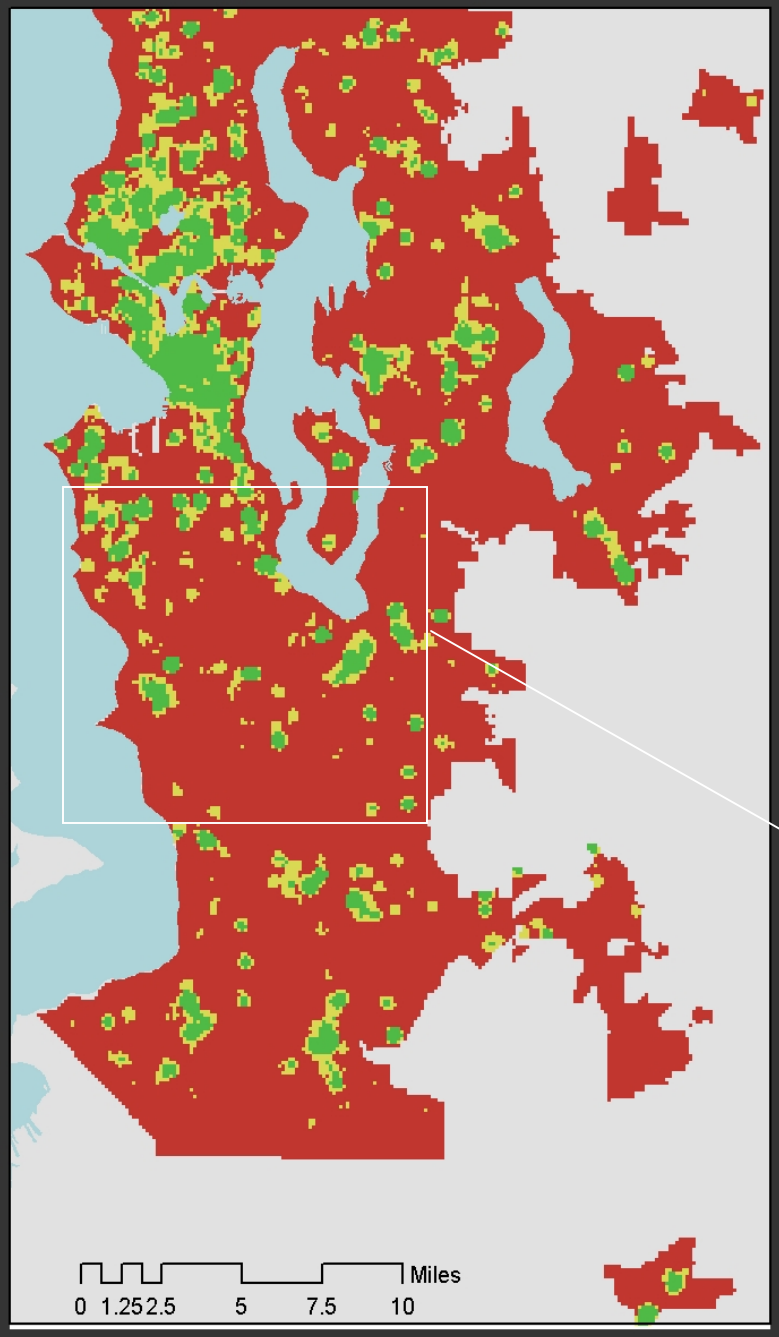
*B values are the weights applied to each variable to calculate the composite layer

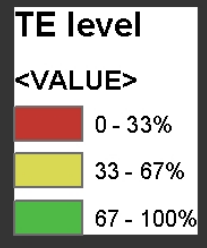
**Significant at 0.99 level

TELUMI Project, Urban Form Lab at the University of Washington March 2005

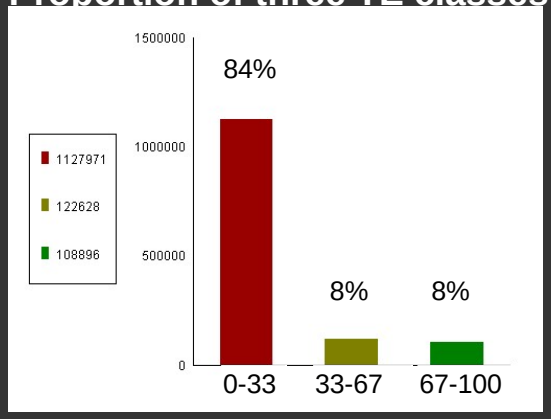
Map of Composite Measure

PROBABILITY OF BUS USAGE>37 PER STOP

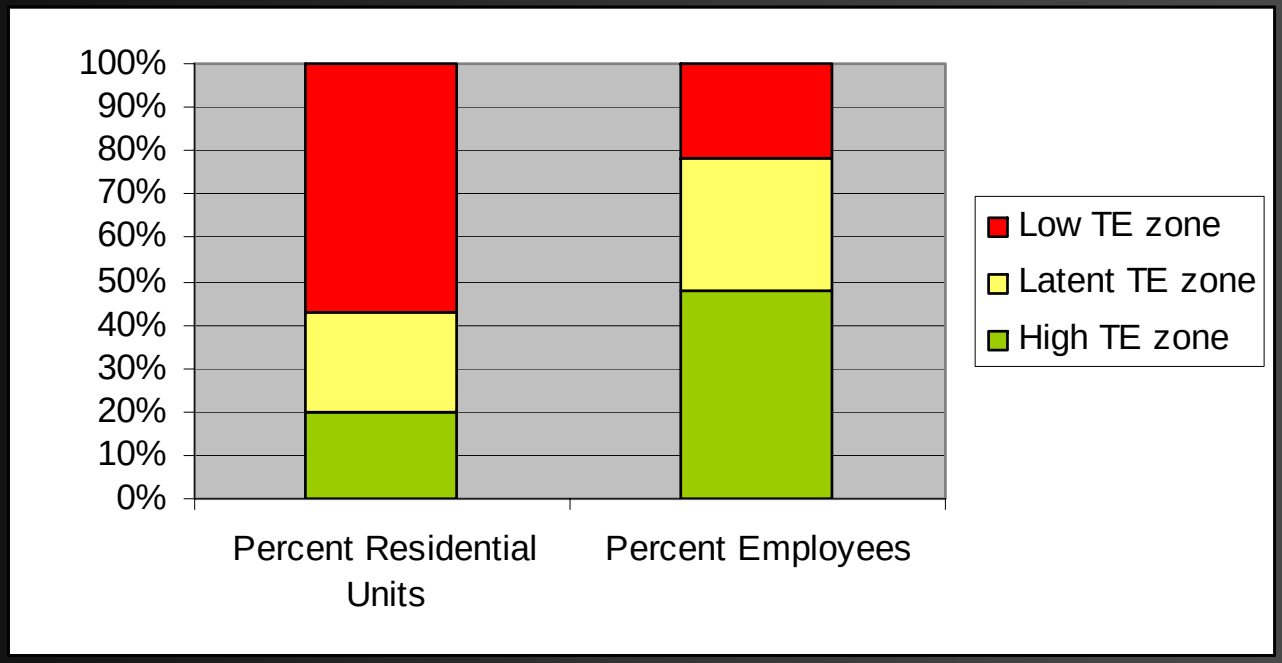




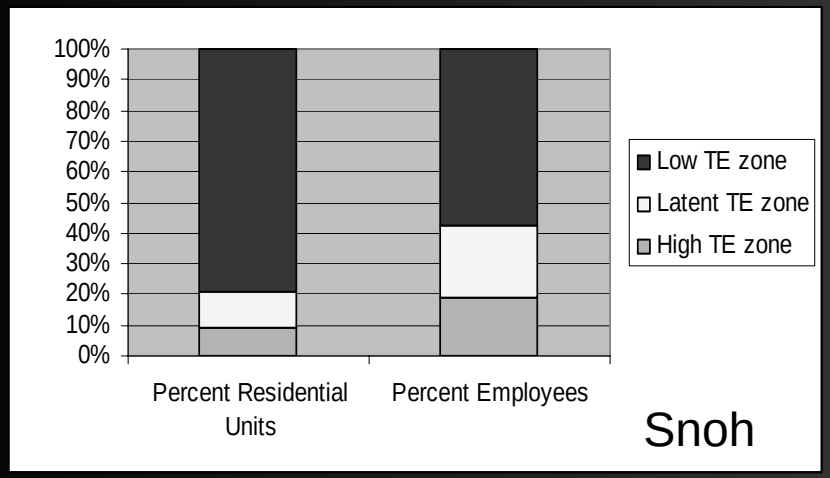
Proportion of three TE classes

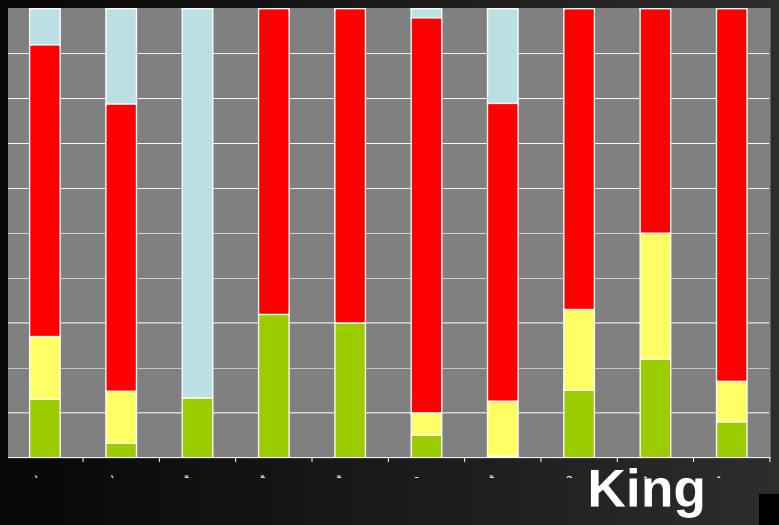


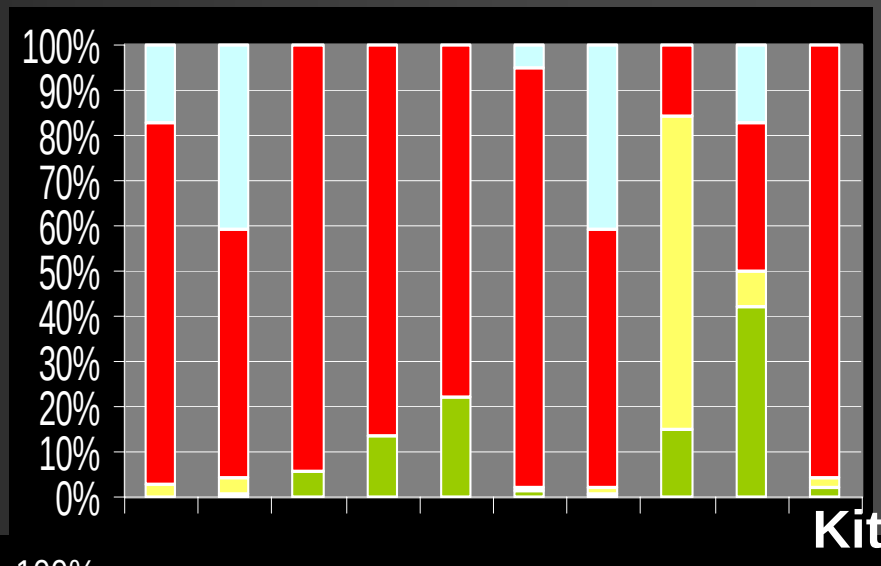
TELUMI
Composite Layer
Analysis

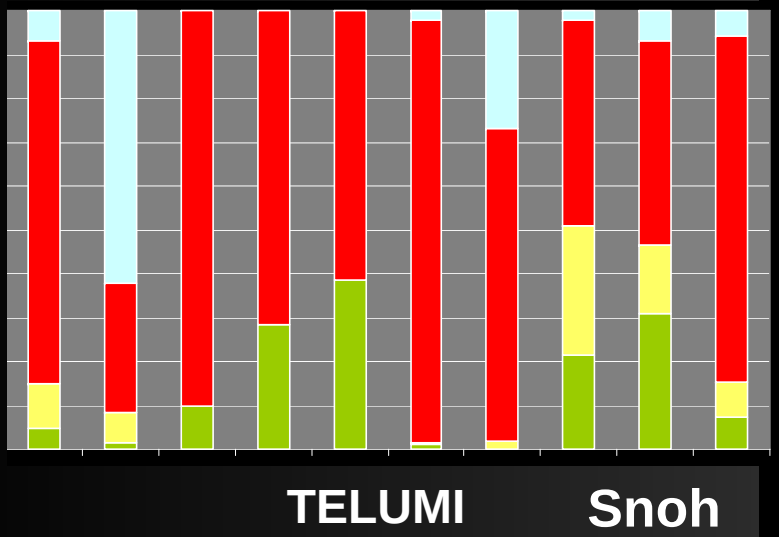


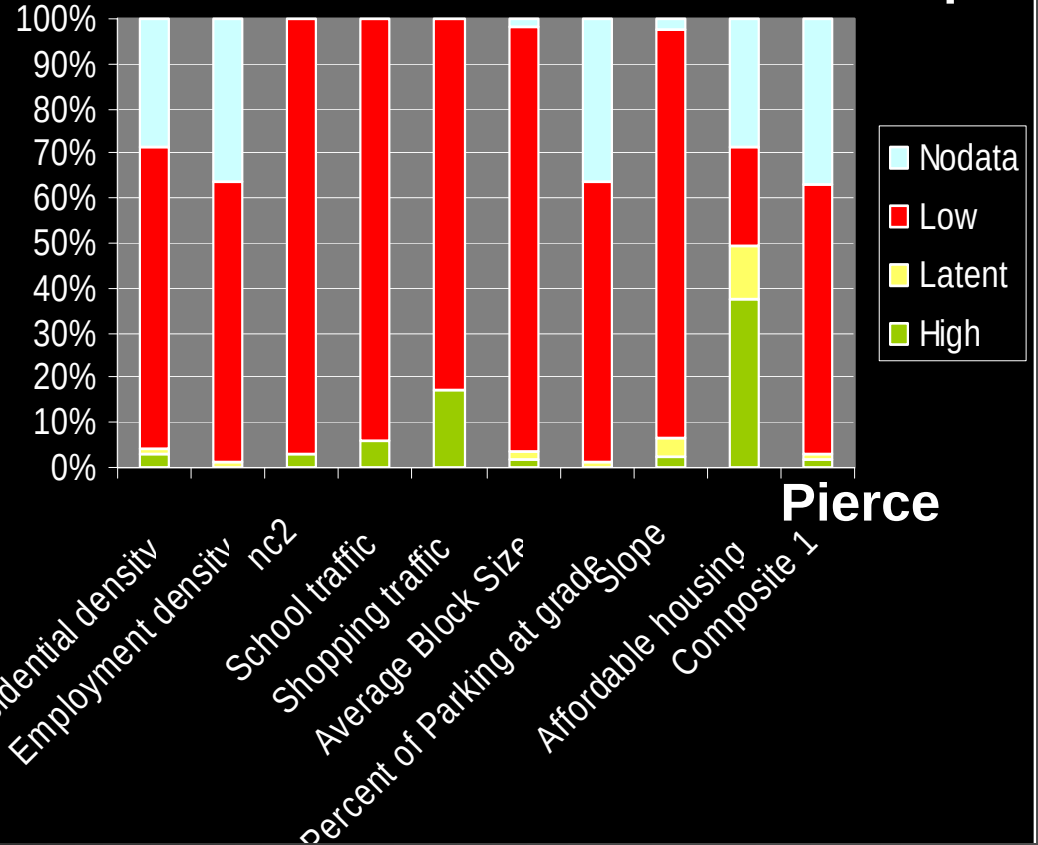
Distribution of Residential Units and Employment in Three TE Zones











Areas in TE by County